Applicant Information

Name:	Tamara McGuire
Title:	PI
Affiliation:	LGL Alaska Research Associates, Inc.
Address:	2000 W International Airport Rd , Suite C1
City,State,Zip:	Anchorage, AK 99502
Phone Number:	(907)562-3339
Fax Number:	(907)562-7223
Email:	tmcguire@lgl.com

Project Information

File Number:	18016
Application Status:	**Application Complete**
Project Title:	Photo-identification Studies of Cook Inlet Beluga Whales, Cook Inlet, Alaska.
Project Status:	Renewal
Previous Federal or State Permit:	[14210](#)
Permit Requested:	• MMPA/ESA Research/Enhancement permit
Where will activities occur?	US Locations including offshore waters
Research Timeframe:	**Start:** 05/29/2014 **End:** 06/01/2019
Sampling Season/Project Duration:	ice-free season, approx. April 15-Nov 15 of each of five years, 2014-2018.

Abstract: Dr. Tamara McGuire of LGL Alaska Research Associates is applying to renew a scientific research permit under the Endangered Species Act and Marine Mammal Protection Act. The permit is requested for a 5-year period (2014-2018) for the project "Photo-identification Studies of Cook Inlet Beluga Whales, Cook Inlet, Alaska". The purpose of the research (ongoing since 2005) is to use photo-identification methods to identify individual whales and to provide information about movement patterns, habitat use, survivorship, reproduction, and population size of Cook Inlet beluga whales (Delphinapterus leucas). The research consists of photo-identification activities from small vessels and from shore-stations. Potential takes may be in the form of Level B harassment during vessel surveys. The request is for the equivalent of 40 vessel-based surveys per year, April-Nov. Based on the 2008 field season mean of 1.8 takes/vessel survey, there could potentially be a maximum of 72 takes annually. No other species listed under the ESA will be taken incidentally. We occasionally encounter harbor seals (Phoca vitulina) during surveys, but do not approach them. The project is located in Cook Inlet, Southcentral Alaska.

Project Description

Purpose: Background

Due to geographic and genetic isolation, Alaska's Cook Inlet beluga whale (CIBW) population (Delphinapterus leucas) is considered a distinct population segment (DPS) by the National Marine Fisheries Service (NMFS). A dramatic decline in the CIBW population occurred in the late 1990s, and the population was designated as depleted in 2000 under the MMPA. In April 2006 NMFS was petitioned to list CIBWs as endangered under the ESA, and the CIBW population was listed as endangered in October of 2008. The CIBW population is also listed as critically endangered by the World Conservation Union (IUCN).

According to NMFS's 2008 Status Review and Extinction Assessment for CIBWs "there are a number of behavioral and ecological characteristics that put Cook Inlet belugas at considerable risk of extinction. These include but are not limited to the following: 1) life history characteristics such as a slow population growth rate; 2) distorted age, size or stage structure of the population, and reduced reproductive success; 3) strong depensatory or Allee effects; 4) habitat specificity or site fidelity; and 5) habitat sensitivity" (Hobbs et al. 2008). The summer range of CIBWs appeared to have contracted to the Upper Inlet since the late 1990's, although the reason for this habitat contraction is not well-understood (Hobbs et al. 2008). There are many information gaps and uncertainties associated with the current understanding of the CIBW population. Information needs include precise annual abundance estimates of the overall population and age-specific cohorts, life history characteristics associated with population growth (births, calving intervals, age at sexual maturity, etc.), mortality (natural and human-induced), and habitat preference (Hobbs et al. 2008).

Photo-identification has proven to be a reliable tool for characterizing abundance, residency, movements, social grouping, population structure, habitat associations, and life history of many marine mammal species in the wild (reviewed by Mann 2000). Photo-identification methods have been useful for nearly every study of cetaceans to which they have been applied, including Amazon River dolphins (boto, Inia geoffrensis) which, like Cook Inlet beluga whales, lack a dorsal fin and live in turbid water (McGuire and Henningsen 2007). Photo-identification has been used to study the distribution, population dynamics, and social structure of beluga whales in Canada's St. Lawrence Estuary (Michaud 1996), and in the White Sea of Russia (Kryukova 2005). Photo-identification surveys can be used to characterize distribution and movement patterns of individual beluga whales, which can augment critical habitat information from NMFS'aerial surveys and tagging-tracking studies. Photo-identification is less invasive than tagging and capture, and natural marks have been shown to persist much longer than tags (McGuire et al. 2008).

LGL's photo-identification of CIBW study has demonstrated the utility of photo-identification as a method for monitoring CIBWs. The study has been ongoing since 2005, and has demonstrated that a large number of beluga whales in Upper Cook Inlet possess distinct natural marks that persist across years, and that these marks can be effectively identified and re-sighted with digital photography.

The objectives of the study are to:

1. Continue to build a photo-identification catalog of distinctively marked individual Cook Inlet beluga whales (CIBWs), and to describe re-sight rates and discoveries of new individuals over time.

2.Describe population characteristics of CIBWs, including age-class distribution, residency/movement patterns, habitat association, behavior, and social group structure.

3. Determine life history characteristics of CIBWs, such as length of mother/calf bonds, frequency of reproduction, and survivorship.

Justification: The proposed photo-identification research provides biological information about individual and population characteristics of CIBWs, including survivorship, reproduction, residency and movement patterns, and habitat use. On a long-term basis, the project provides data necessary to monitor and assess individual and population-wide characteristics such as length of mother/calf bonds, frequency of reproduction, and survivorship, and will allow for inter-annual comparisons of these characteristics, including estimates of population size. These long-term data are useful to NMFS and other resource managers to help monitor if the population is recovering, declining, or stable. In the 2008 Conservation Plan for Cook Inlet Beluga Whales (NMFS 2008a), NMFS endorsed photo-identification studies as a method of establishing a long-term data set to monitor the CIBW population, and to provide information on habitat use and residency in upper Cook Inlet. The current summer range of CIBWs has contracted to Upper Cook Inlet, which abuts Anchorage, the largest urban area in Alaska. Whales are exposed to vessel traffic, aircraft noise, sewage discharge, oil and gas extraction activities, sport and commercial fishing, military activity, and construction activities associated with highway

and port development. Data from the photo-identification project will allow for the creation of a GIS database that will overlay individual whale distribution and movement data with geographic features and human activities. The findings of this project will be of use to those seeking to better understand and manage CIBWs and their habitat, including scientists and resource managers (NOAA, NMFS, NMML, the State of Alaska, the Environmental Protection Agency, the Army Corps of Engineers), industry representatives (oil, coal, shipping, transportation), NGO's, and the general public.

Significance and current/past findings: The study is demonstrating the utility of photo-identification as a method for monitoring CIBWs, but continued sampling of photographically identified whales is necessary in order to learn more about individuals and the population. The LGL photo-identification catalog and associated surveys from eight field seasons (2005-2012) have provided information about the distribution and movement patterns of approximately 300 individually identified beluga whales, including mothers with calves (McGuire et al. 2013). We have found that identified CIBWs were rarely observed traveling between areas of Cook Inlet, but were instead encountered in distinct areas (i.e., along the Susitna River Delta, in Eagle Bay in Knik Arm, or traveling up and down Turnagain Arm). We have documented that most identified individuals were photographed in all areas surveyed, although some have been documented in only one or two areas; this information will be useful for understanding use of habitat, although sample sizes are still small and additional data is needed in order to conduct statistical analyses of site fidelity and movement patterns. At the conclusion of the 2010 field season, 129 identified beluga whales were presumed to be reproductive adult females based on the close proximity of calves (McGuire and Bourdon 2012). Many of these mothers were resighted with calves in 2011 and 2012, although these results are still being analyzed and will be added to the 2005-2010 data. Continued photo-tracking of these mothers and calves will allow us to learn more about the length of mother/calf bonds and about calving intervals. Many identified mothers were gray in color, indicating that color alone is not a reliable indicator of reproductive maturity; continued study (especially of new mothers) will offer insight into the relationship between body color and maturity. Localized areas for calving and calf rearing were not detected, as calves were seen in all locations surveyed, suggesting that all of Upper Cook Inlet is used by groups with calves, although we have found that some areas are more likely than others to have groups containing neonates. Newborn calves were first seen in mid/late July in all field seasons 2007-2012 (newborns were not distinguished from older calves in previous years) which indicates the onset of a distinct calving season. We are currently examining the extent of inter-annual variability in timing of calving and calf composition of groups. We have been able to identify and track photo-identified belugas from unique scars from satellite tags used by NMFS researchers on 18 CIBWs tagged between 1999 and 2002, and our sighting records indicate that at least seven individuals survived capture and tagging. In addition, depending on when they were tagged, photo-tracking of these CIBWs can provide between three and 13 years of survivorship data (more with future years of fieldwork.

In summary, the rationale in seeking to continue photo-identification surveys 2014-2018 is to allow us to continue to photographically track previously-identified individuals, to identify new individuals, to learn more about movement and residency patterns, to document how long calves are seen with their mothers, to document the color range of reproductive females, and to continue to document the survivorship and reproductive histories of previously-tagged CIBWs. Continuation of the study will also allow us to study how natural marks may change over time and how this could affect our ability to photographically follow whales over long time periods, as well as the ability to estimate population size from mark recapture models. Long-term documentation of marks indicative of disease, injury, and predation will allow us to better understand possible threats to individuals and to the population. The strength and utility of the photo-identification project is growing exponentially with the proportion of the CIBW population that is photographed and identified.

NMFS' Conservation Plan action objectives that are being addressed by LGL's Cook Inlet Beluga Whale Photo-identification Project are the following (table formatting won't import into this on-line application:

NMFS Conservation Plan Action Objective NMFS Conservation
Plan Priority Number How Conservation Plan Action Objectives will be implemented through the Cook Inlet Beluga Whale Photo-identification Project
Abundance estimates 1 Photographic mark-recapture models to estimate population size
Characterize Cook Inlet beluga life history 1, 2, 3 Sighting histories of identified individuals provide info. on age of maturity, female reproductive biology, mating systems, and population structure
Assess health of Cook Inlet belugas 1, 2 Photographic documentation of infections and injuries
Refine knowledge of CIBW habitat requirements and describe their range, distribution, and migration 2, 3 Sighting histories and habitat associations of identified individuals
Reduce direct injuries and mortalities- develop less-invasive technology 2 Photo-id techniques provide tag-like information, but are less invasive and longer-lasting

These long-term data provided by the CIBW Photo-id project will be useful to NMFS and other resource managers and stakeholders to help determine if the population is recovering, declining, or stable. Methods and results of the project were presented to NMFS scientists at the National Marine Mammal Laboratory (NMML) in 2006, and the ensuing workshop report stated their support of the project and utility of the information it provides (McGuire et al. 2008).

Justify the choice of species: Our objective is to learn more about Cook Inlet beluga whales; therefore it makes sense for us to directly study this DPS.

Justify the number of animals to be used: Ideally, to maximize the information
about CIBWs that this study is able to provide, we should photograph all animals in the population at least once during any given field season. Given that the population is so small (estimated by NMFS to be 312 animals in 2012; Hobbs et al. 2012) and is localized in Upper Cook Inlet, this goal should be feasible, although it will depend on sampling effort and encounter rates. Because the ice-free season in Cook Inlet has increased in the last few years, we are requesting that our field season extend from mid-May/late Oct to mid-April/mid Nov. This could add an additional 10 surveys to each annual field season, which would in turn increase our potential takes from 54/yr to 72/yr.

Explain why the proposed research cannot be conducted using an alternative species or stock (as above). Justify the choice of species: Our objective is to learn more about Cook Inlet beluga whales, therefore it makes sense for us to directly study this DPS. Other Alaskan stocks of belugas are not ESA-listed or MMPA-depleted and they live in very different habitats and are exposed to different kinds of human activities. It is only by using photo-identification to identify and track individual Cook Inlet beluga whales in situ that we can learn about this population and how it interacts with its unique environment.

Explain why your work cannot be accomplished without taking CIBW: For a brief window annually in the fall, some CIBWs can be photographed from shore and do not require approach by vessel, but for the majority of the field season, and particularly along the mudflats of Upper Cook Inlet, such as the Susitna River Delta where groups of over 200 often congregate, CIBWs can only be approached at a distance usable for photo-identification from vessels (and therefore potentially "taken"). In addition to vessel-based photo-identification surveys, we also conduct land-based photo-identification surveys. Land-based surveys have the advantage of minimal risk of disturbance to the whales; however, significant drawbacks include limited access to many geographic areas for sampling (therefore limiting identification of any geographic sub-groups), decreased photo-quality of photographs taken from shore due to increased distance between whale and photographer, and limited sampling of all life stages (small and/or gray belugas are more difficult to detect and photograph from shore than from boats). We consider the information obtained from land-based photographic surveys to be supplementary to information obtained from boat-based surveys, and do not consider land-based surveys to be a feasible alternative to boat-based surveys.

Description: For this photo-identification study, dedicated surveys of Upper and Middle Cook Inlet are conducted from small vessels in the Susitna River Delta, Knik Arm, around the Port of Anchorage, in the Kenai River, in the waters of the Kenai River Delta, and from Chickaloon Bay/Southeast Fire Island, and from shore along Turnagain Arm and at the Port of Anchorage (McGuire et al. 2008). Boat-based surveys of the Middle and Lower Inlet, including around Kalgin Island, may occur in addition to surveys of the Upper Inlet. We hope to conduct up to 40 surveys per year during the ice-free weeks between mid-April and mid-November, for each of the five years of the permit. Our vessel-based surveys cover a pre-determined route of a given area (route determined by tidal stage, water depth, and navigational hazards), and are not line-transect surveys.
The primary vessel used to survey for beluga whales is a Zodiac ProMan9, 4.9-m rigid-hull inflatable with a 4-stroke 50 hp Yamaha motor. For safety reasons, larger vessels may occasionally be used to access areas of dangerous winds/currents. The survey boat usually carries one skipper and one crew; this two-person team also photographs the whales and records data. The PI has seven field seasons of experience safely and carefully operating a research vessel around CIBWs.

Anticipated approach distances for future research are based on 2008 survey data (McGuire 2008b): estimated mean distance between the survey vessel and the initial sightings of groups was 281.4 m (range 50-700 m) and mean minimum distance between whales and the survey vessel was 50.7 m (range 1-300 m); it should be noted the mean minimum distance included those instances when the whale approached the boat. Whale groups are approached at no-wake speed (< 4 knots) by the survey vessel, then followed slowly, parallel to the group, matching the speed and heading of the group in order to obtain images of lateral sides of all individual whales while minimizing disruption to the group. At no time are whales approached at full throttle, and whales are never chased. When possible, we attempt to maneuver the survey vessel to parallel the group towards the leading edge of a traveling group, then slow the boat to idle, allowing the majority of the group to pass by the boat. Often the boat will first approach the group at a 45 degree angle, and then close the angle as we approach the group until the boat is parallel to the group, with a distance of greater than 50 meters between the vessel and the whales. Often whales will approach the boat once the boat has ceased its approach (at 50 m or more). If whales approach within ca. 2 m of the boat, the engine is put into neutral and/or turned off. Data collected during beluga whale group encounters includes counts of the estimated minimum group size, minimum number of whales present by color-classes, number of calves and newborns, group behavior, and digital photographs for individual whale identification. We try to obtain photographs of the right and left sides of whales. Data forms are used to record beluga whale sightings and environmental conditions. A GPS is used to record positions of whale groups and survey track lines. Digital photographs of beluga whales are collected using a Nikon D300, 12 megapixel digital SLR camera, with Nikkor 70-300 mm and 80-400 mm zoom telephoto auto focus lenses. Once all individuals in the group have been photographed, or once observers determine that they are unable to photograph all whales in a group, the survey boat leaves the group and continues the survey, looking for new whale groups to photograph. Whale groups are never "tracked" (i.e., followed over time) with the survey vessel once photographic samples have been collected. Whale groups are only approached once per survey day, unless a group is initially difficult to photograph, abandoned by the survey vessel after < 5 minutes, and encountered again later in the day. Mean encounter duration will depend on the size of the group. For example, in 2007, mean encounter duration was 37.9 minutes per group (McGuire 2008a). In 2008, mean encounter duration was 64.6 minutes per group (McGuire 2008b). Mean encounter duration was longer in 2008 in than in 2007 because group size was larger in 2008.
Positions of beluga whale sightings and survey routes are mapped in ArcGIS 9 Version 9.1. Color composition for each group is determined from field counts and from cataloged photographs obtained during each encounter. Primary and secondary behaviors of beluga whale groups are compared among the locations. Photographs are sorted according to quality with the use of ACDSee photo software. Images of belugas are cropped, separated into images of left and right sides of the whales, and then compared to images within the CIBW catalog. Sighting histories (i.e., dates and locations of sightings) are compiled for all identified beluga whales. Markings used for photo-identification of individual beluga whales consist of natural marks from conspecifics, pigmentation patterns, scars from injury or infection, and marks left from satellite tags attached by NMFS 1999-2002; our research project does not apply marks to whales. All surveys are conducted with the on-site supervision of the principal investigator (McGuire). The NMFS Regional Administrator is informed in writing more than two

weeks before initiation of on-site activities. Vessel surveys are not conducted on days when the PI is notified that NMFS/NMML is conducting aerial surveys for Cook Inlet beluga whales.

The study design is based on the PI's previous years of field work with CIBW, and is designed to maximize our probability of encountering whale groups and photographing all whales in a group, while minimizing the amount of time we spend with any single group of whales (to limit exposure to boat noise and also to decrease the volume of photos we take and later have to process). The survey schedule varies according to those combinations of seasons, locations, and tides which provide the greatest likelihood of encountering whales. Photo-identification survey schedules are also determined from results from NMFS aerial surveys (Hobbs et al. 2006) and from other LGL studies of Cook Inlet beluga whales (Funk et al. 2005, Prevel-Ramos et al. 2006, Markowitz et al. 2007, Markowitz and McGuire 2007, Nemeth et al. 2007, McGuire et al. 2008).

Beluga whales may be taken by possible level B harassment in the course of photo-identification surveys from vessels. Level B harassment is considered to take place if an individual is approached by the survey boat at a distance of less than 50 meters, or if behavioral changes caused by the survey vessel are observed at greater distances (Kristy Beard and Amy Hapemen, NMFS, personal communication to Tamara McGuire December 2008). The take table assumes that that the entire CIBW population (375) is seen during boat-based surveys during a field season. The expected take of 72 is the annual maximum number of beluga whales predicted to be taken during a field season, assuming 40 surveys are conducted during a field season (mid-April through mid-November). This is based on calculations that 3% (30 whales of 947 whale sightings) of whales sighted during 17 boat-based photo-identification surveys in 2008 were approached within 50 meters (McGuire et al. 2008b). Based on a mean of 56 whales per survey seen in 2007, this corresponds to 1.8 whales taken per survey, which could result in 72 takes in future years if 40 surveys per year are conducted. This estimate is the maximum number of belugas predicted to be taken annually and actual take will likely be much lower; only six takes occurred in 2009, 4 takes occurred in 2010, and 7 takes occurred in 2011 (takes from 2012 will be reported in a report due July 2013).

Indicate whether individual animals will be taken more than once per year (e.g., recapture for instrument retrieval) and the frequency of the take per individual (e.g., number of times per year or field season): The maximum reencounter rate of an identified whale was for a single beluga that was resighted 20 times over a three-year period during 99 boat-based surveys. This same individual was seen 15 times in one year (McGuire et al. 2008). Based on data from 2008 presented in the previous paragraph, we assume a take rate of 3% (number of whales taken per boat-based survey per number of whales sighted). Therefore the maximum annual individual take rate for an individual sighted on 15 surveys could result in an estimated maximum of 0.45 takes annually. The 0.45 maximum is likely a gross overestimate, as the vast majority of photographs are taken from >50 m away from a whale and do not constitute takes. The mean annual take rate per individual would likely be much less than 0.45 because resighting records of individual whales photographed in 2005-2007 indicate that 46% of identified whales were photographed on only one occasion, 90% were resighted fewer than 8 times, and only 188 (confirmed individuals) to 278 (potential individuals) whales of an estimated population of 375 have been identified one or more times (McGuire et al. 2008). We have never photographed the same individual whale in more than one location on a single survey day, which indicates that a single whale is unlikely to be exposed to more than one take per day, although it is theoretically possible if a whale moves among two or more groups that are approached by the survey vessel on the same day.

State whether the same animals will be taken in more than one manner, and if so, how (e.g., capture, blood sample, biopsy, and flipper tag): Animals will not be taken in more than one manner. Any taking that may occur would only be in the form of Level B harassment during the course of photo-identification surveys.

For specimen sampling, indicate type, location, size, and/or volume of samples to be taken and methods of preserving, shipping, and analyzing samples: We will not be specimen sampling.

Provide information on the target species' life history with regard to how your proposed activities coincide with or avoid sensitive physiological/biological periods such as reproductive seasons and maternal care: Due to the narrow window of ice-free boating months in the study area, we can only conduct boat-based surveys during late spring-early autumn, which include the summer months when belugas are thought to reproduce (Hobbs et al. 2008). Our objectives include using photo-identification methods to document reproductive seasons, the existence of "nursery" areas, and length of maternal care, so it is important that we survey during sensitive periods and in sensitive habitats, while taking care to minimize disturbance to whales during photo-identification surveys.

Non-target species that could be affected by Level B harassment during vessel-based research surveys for beluga whales are harbor seals (Phoca vitulina), harbor porpoises (Phocoena phocoena) and Steller sea lions (Eumetopias jubatus). Harbor seals have been observed occasionally during surveys (33 harbor seals sightings were recorded in 2008; 25 of these seals were seen on land in a single group during a single survey), but were not approached in the course of this research. We never intentionally approach hauled-out harbor seals. The majority of sightings of hauled-out harbor seals have been at >100 m. On several occasions, harbor seals in the water have surfaced within 50 m of the survey vessel, often when the engine was in neutral or off. Permanent haul-out sites for harbor seals do not exist in Upper Cook Inlet, although we have occasionally seen harbor seals hauled on mudflats at the mouth of the Little Susitna River, at the mouth of the Susitna River, and along tidally-exposed mudflats at the mouth of Turnagain Arm. We have observed harbor seals and belugas congregating seasonally at the mouth of rivers during seasonal fish runs. No other marine mammal species have been seen during photo-identification surveys for beluga whales, with the exception of a single Steller sea lion seen once in 2010. Sea lion rookeries do not exist in Upper Cook Inlet. Non-target species are not approached by the photo-identification survey vessel. Care is taken to avoid temporary harbor seal haul-out sites. If a non-target aquatic species approaches within ca. 2 m of the boat, the engine is put into neutral and/or turned off.

Supplemental Information

Status of Species: The Cook Inlet beluga whale Distinct Population Segment (Delphinapterus leucas) has been listed as Endangered Species Act (ESA) Endangered and Marine Mammal Protection Act (MMPA) Depleted.Species information is from: http://www.nmfs.noaa.gov/pr/species/.

Lethal Take: Not Applicable

Anticipated Effects on Animals: Cook Inlet beluga whales are found regularly in the vicinity of large vessels and dredging equipment at the Port of Anchorage (Prevel-Ramos et al. 2006, Markowitz and McGuire 2007), and at least some CIBWs appear to have become habituated to vessel noise and other anthropogenic disturbance (NMFS 2008b), although it is unknown if this is true for all individuals in the population. While there is no question that beluga whales can hear the photo-identification survey vessel motor at low idle, they generally appear habituated to the presence of the survey vessel (McGuire 2008a, b). We do not anticipate that the proposed activity (vessel-based photo-identification surveys) will cause pain, suffering, or injury to the target species (Cook Inlet beluga whales). It is possible that vessel-based surveys may have behavioral effects on beluga whales, due to disturbance from the vessel motor noise and/or the physical presence of the vessel near whales (Lusseau and Bejder 2007). It is difficult to predict what proportion of beluga whales exposed to the survey might respond negatively. Studies of the effects of whale watching boats on cetaceans have demonstrated substantial variation in response according to the individual, life-history stage, and context of disturbance (Lusseau and Bejder 2007). Beluga whales may be taken by possible level B harassment in the course of photo-identification surveys from vessels. Level B harassment is considered to take place if an individual is approached by the survey boat at a distance of less than 50 meters (m), or if behavioral changes caused by the survey vessel are observed at greater distances (Kristy Beard and Amy Hapemen, NMFS, personal communication to Tamara McGuire December 2008). We estimated that 3% (30 whales of 947 whale sightings) of whales sighted during 17 vessel-based photo-identification surveys in 2008 were approached within 50 m (McGuire 2008b). Based on a mean of 56 whales per survey seen in 2007, this corresponds to 1.8 whales taken per survey. Possible Level B take rates in 2007 were estimated at 9 whales taken during 7 survey days in 2007(McGuire 2008a), resulting 1.3 whales taken per survey. Minimum approach distance data were not collected in 2005 or 2006. Photographs taken during the photo-identification project show repeated sightings of individuals on the same day, on multiple days within a season,and annually over the 8-year study period, supporting the notion that the whales have habituated to the vessel over time. Very few perceptible possible short-term responses to the vessel have been noted, the most common being apparent affiliative or play behavior, such as approaching the vessel and bubble blowing under the vessel, exhibited most often by gray beluga whales. The nature and duration of an anticipated negative response could range from momentarily avoiding the survey vessel, to leaving the survey area completely (during the course of a survey day, or over a longer period). The later seems unlikely, given photographically identified whales have been consistently observed near and within concentration areas such as Eagle Bay and the Susitna, Little Susitna, and Beluga Rivers (McGuire et al. 2008). Based on this and on results of long-term photo-identification studies of other small cetaceans elsewhere (Wells 1998), anticipated effects of this study on CIBW individuals and on the population as a whole are expected to be negligible.

Measures to Minimize Effects to Listed Species: The research activity consists of vessel-based photo-identification surveys for beluga whales. Every effort is made to avoid disturbing the whales while approaching closely enough (but >50 m) to allow identification photographs to be taken. Whale groups are approached at no-wake speed (< 4knots) by the survey vessel once per encounter, then followed slowly, parallel to the group, matching the speed and heading of the group in order to obtain images of lateral sides of all individual whales while minimizing disruption to the group. If a whale approaches within ca. 2 m of the boat, the engine is put into neutral and/or turned off (smaller gray beluga whales frequently approach the stationary boat and blow bubble under it). At no time are whales approached at full throttle, and whales are never chased. The survey boat will leave a whale group when it appears that all individuals have been photographed, or if the group appears to be avoiding the survey boat, and/or if the group is difficult to photograph. If groups appear to be sensitive to approach by the survey vessel, exhibiting behaviors such as tail slaps or "snorkeling behavior" (neither surfacing in the typical arch and roll nor diving, but remaining just at or below the surface to breath), the survey vessel will note the behavior, leave the group, and look for other groups to photograph. Large beluga groups are often spread out along long sections of mudflats, and when this occurs the survey vessel concentrates on photographing individual whales as quickly as possible and then leaving them to photograph other whales in the group, thus limiting time spend with any one whale or sub-group of the larger group. Although photographing cow/calf pairs is a research priority, the survey vessel will not approach within 50 m of cow/calf pairs. The survey vessel will never intentionally come between a cow/calf pair; if this happens accidentally, the survey vessel will slowly move away from the cow/calf pair. The survey vessel will not intentionally split whale groups. If mating or calving is observed, the behavior will be photographed quickly (beluga mating and calving have never been photographed in Cook Inlet), and the survey vessel will move away to a distance >100 m, then turn off the motor. The survey vessel takes care to avoid approaching groups in shallow areas on a falling tide, in order to avoid the risk of stranding to the whales and to the survey vessel.

Resources Needed to Accomplish Objectives: Current funding for the CIBW photo-id project is for the 2013 field season, which falls under the current SRP (which will expire in May 2014). At this time we do not have funding for the 2014 field season; however, the National Fish and Wildlife Foundation (NFWF) has funded this project annually since 2005 and we have no reason to believe funding will not continue in future years. The application period for 2013 funding is in the summer of 2013, after the window for this permit application. The project also received support for fieldwork in 2011-2013 from the Kenai Peninsula Borough/NMFS and from the Alaska Department of Fish and Game/Department of Defense.

National Fish and Wildlife Foundation, 1120 Connecticut Ave NW, Suite 900, Washington, DC 20036.

Disposition of Tissues: Not Applicable

Location/Take Information

Location

Research Area: Pacific Ocean **State:** AK **Stream Name:** Cook Inlet **Latitude North:** 61.486587 **Latitude South:** -151.882968 **Longitude East:** -149.03811 **Longitude West:** -153.14649
Location Description: The study area is Cook Inlet, Alaska. Most of the field work will occur in Upper Cook Inlet (emphasis on the Susitna River Delta, Turnagain Arm, the Port of Anchorage, Knik Arm, and Chickaloon Bay), with occasional surveys of the middle and lower Inlet.

Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Takes Per Animal	Take Action	Observe /Collect Method	Procedure	Transport Record	Begin Date	End Date
1		Whale, beluga	Cook Inlet Stock (NMFS Endangered)	Wild	All	Male and Female	120	1	Harass	Survey, vessel	Count/survey; Observations, behavioral; Photo-id	N/A	5/29/2014	6/1/2019
		Details: Takes are a 5-year cap, not to exceed 30 takes in any year.												
2		Seal, harbor	Gulf of Alaska Stock	Wild	All	Male and Female	200	1	Harass	Survey, vessel	Incidental disturbance	N/A	5/29/2014	6/1/2019
		Details: Takes are annual.												

NEPA Checklist

1) If your activities will involve equipment (e.g., scientific instruments) or techniques that are new, untested, or otherwise have unknown or uncertain impacts on the biological or physical environment , please discuss the degree to which they are likely to be adopted by others for similar activities or applied more broadly.

Our research activity will not involve equipment or techniques that are new; boat-based photo-identification surveys have been a standard research practice for cetacean studies for decades (Würsig and Würsig 1977).

2) If your activities involve collecting, handling, or transporting potentially infectious agents or pathogens (e.g., biological specimens such as live animals or blood), or using or transporting hazardous substances (e.g., toxic chemicals), provide a description of the protocols you will use to ensure public health and human safety are not adversely affected, such as by spread of zoonotic diseases or contamination of food or water supplies.

Our research activity does not involve the collection, handling, or transport of potentially infectious agents or pathogens, or using or transporting hazardous substances. Our research activities involve taking photographs of free-swimming beluga whales in the wild. We do not collect biological specimens, only photographs.

3) Describe the physical characteristics of your project location, including whether you will be working in or near unique geographic areas such as state or National Marine Sanctuaries, Marine Protected Areas, Parks or Wilderness Areas, Wildlife Refuges, Wild and Scenic Rivers, designated Critical Habitat for endangered or threatened species, Essential Fish Habitat, etc. Discuss how your activities could impact the physical environment, such as by direct alteration of substrate during use of bottom trawls, setting nets, anchoring vessels or buoys, erecting blinds or other structures, or ingress and egress of researchers, and measures you will take to minimize these impacts.

Our activities will not take place in or near National Marine Sanctuaries, Marine Protected Areas, State National Parks or Wilderness Areas, or designated Wild and Scenic Rivers. At times our survey route may bring us near the Anchorage Coastal Wildlife Refuge and near the Susitna Flats State Game Refuge, but we do not come ashore in the refuges and our activities will not impact the physical environment. Essential Fish Habitat does exist in the proposed study area (www.nmfs.noaa.gov/habitat), but our activities will not impact the physical environment because in the course of our photo-identification surveys we will not be collecting fish, anchoring vessels or buoys, or beaching the vessel along mudflats (with the possible exception of anchoring the boat in an emergency situation such as losing engine power during a changing tide). All boat launch and retrieval will occur at the Port of Anchorage

Small Boat Launch, or at the City of Kenai City Dock. We will be working in the Critical Habitat of Cook Inlet beluga whales, but will not be altering the physical habitat or collecting beluga prey.

4) Briefly describe important scientific, cultural, or historic resources (e.g., archeological resources, animals used for subsistence, sites listed in or eligible for listing in the National Register of Historic Places) in your project area and discuss measures you will take to ensure your work does not cause loss or destruction of such resources. If your activity will target marine mammals in Alaska or Washington, discuss measures you will take to ensure your project does not adversely affect the availability (e.g., distribution, abundance) or suitability (e.g., food safety) of these animals for subsistence uses.

Our work will not affect entities listed in or eligible for listing in the National Register of Historic Places, nor will it cause loss or destruction of scientific, cultural or historic resources. We will not be using or altering any of these resources, as we will simply be taking photographs from small boats of wild, free-swimming beluga whales. Based on our previous eight years of annually seeing the same individual whales in the same seasonal locations and in the same body condition, our activities do not appear to be affecting the availability or suitability of Cook Inlet beluga whales for subsistence use. It should also be noted that the subsistence harvest of these animals is not currently occurring given their low population size.

5) Discuss whether your project involves activities known or suspected of introducing or spreading invasive species, intentionally or not, (e.g., transporting animals or tissues, discharging ballast water, use of equipment at multiple sites). Describe measures you would take to prevent the possible introduction or spread of non-indigenous or invasive species, including plants, animals, microbes, or other biological agents.

Our activity does not involve the collection, handling, or transport of biological or other material from one area to another. We do not collect or transport biological specimens, other than photographs. Our research vessel(s) will be the same one(s) used in previous years of the project, and are only used in the study area.

Project Contacts

Primary Contact: Tamara McGuire

Principal Investigator: Tamara McGuire

Other Personnel:

Name	Role(s)
Amber Stephens	Co-Investigator

Attachments

Contact - Amber Stephens: C16825T5AmberStephensCV.doc (Added Apr 1, 2013)

Contact - Tamara McGuire: C9780T5McGuire Tamara Cv LGL .doc (Added Mar 27, 2013)

Project Description - P18016T118016 References.docx (Added Apr 23, 2013)

Project Description - P18016T12009 FIELD AND RESIGHT REPORT-FINAL.pdf (Added Apr 1, 2013)

Project Description - P18016T12010 FIELD AND RESIGHT REPORT-Final.pdf (Added Apr 1, 2013)

Project Description - P18016T12011 Cook Inlet Beluga Photo-id FIELD AND RESIGHT REPORT- Final .pdf (Added Apr 1, 2013)

Project Description - P18016T1LGL Final Photo-id Resight Report June 2009.pdf (Added Apr 1, 2013)

Project Description - P18016T1NPBR Final Report Project 910.pdf (Added Apr 1, 2013)

Status

Application Status: Application Complete

Date Submitted:	April 1, 2013
Date Completed:	April 23, 2013
FR Notice of Receipt Published:	May 3, 2013 **Number:** 2013-10476
Comment Period Closed:	June 3, 2013 **Comments Received:** Yes **Comments Addressed:** Yes
Last Date Archived:	May 30, 2014

• **MMPA/ESA Research/Enhancement permit**

  Current Status: Issued   **Status Date:** May 29, 2014

  Section 7 Consultation: Formal Consultation

  NEPA Analysis: Categorical Exclusion

  Date Cleared by General Counsel: May 20, 2014

  Expire Date: June 1, 2019

Analyst Information:

1) Amy Hapeman   Phone: (301)427-8401
                               Email: Amy.Hapeman@noaa.gov

2) Rosa L.   Phone: (301)427-8401
   González   Email: Rosa.L.Gonzalez-Marrero@noaa.gov

Modification Requests

Reports